Lesson 5
Elaborate/ Evaluate

Drug Addiction Is a Disease—So What Do We Do about It?

Photo courtesy of Gray Wolf Ranch Wilderness Recovery Lodge.

At a Glance

Overview
Students make predictions about the success rate for treatment of addiction compared with treatment for other chronic diseases. Then students evaluate case studies of individuals with different diseases to compare and contrast how the diseases are similar to, or different from, the others.

Major Concept
Drug addiction is a recurring chronic disease that can be treated effectively similar to other chronic diseases.

Objectives
By the end of these activities, the students will

- understand that addiction is a chronic disease that is likely to recur;
- recognize that treatment is most effective when it combines pharmacological and behavioral treatments;
- be able to explain how treatment for addiction is similar to that for other chronic diseases, such as diabetes or heart disease; and
- recognize that treatment is more effective if addicts, like people with other chronic diseases, choose to participate actively in their treatment.

Basic Science–Health Connection
Addiction has many dimensions and disrupts many aspects of a person's life. Scientific research and clinical practice have yielded a variety of effective approaches to treatment for addiction to certain drugs, such as heroin. Continuing research is yielding new approaches to developing medications to treat addiction to other drugs, such as cocaine, for which no medications are currently available.

Background Information

Drug abuse and addiction lead to long-term changes in the brain's chemistry and anatomy. The changes in the brain cause drug addicts not only to lose the ability to control their drug use, but their addiction also changes all aspects of their lives. Drug addicts often become isolated from family and friends and have trouble in school or work. In addition, the compulsive need for drugs can lead to significant legal problems. While the biological foundation for drug addiction does not absolve an individual from the responsibility of his or her actions, the stigma of drug addiction needs to be lifted so individuals may receive proper medical treatment, similar to that for other chronic diseases.[1]

Addiction is a recurring chronic disease. No cure is available at this time, but addiction can be treated effectively. Drug addiction is often viewed as a lapse in moral character. This value judgment influences how society deals with the disease, both socially and medically. Unfortunately, because people, including physicians, have often viewed addiction as a self-inflicted condition, drug addicts have not always received the medical treatment common for other chronic diseases. Treating addiction requires more than a "just say no" approach.

Treatment for addiction is often very effective. Treatment is successful when the addict reduces or abstains from drug use, improves his or her personal health or social function, and becomes less of a threat to public health and safety.[2] Certain addictions, such as heroin addiction, can be treated with pharmacological agents.[3,4] Methadone, the most common pharmacological treatment, prevents craving and withdrawal symptoms in heroin addiction. Methadone is an opiate receptor agonist. That is, methadone binds to the opiate receptor just as heroin does. Methadone, however, does not produce the euphoria or "high" that results from heroin use.

Figure 5.1: Methadone can be part of an effective treatment plan for addiction to opiates. Photograph of pills by, and used with permission of, Roxane Laboratories, Inc. All Rights Reserved.

A second medication prescribed for heroin addiction is naltrexone. Unlike methadone, naltrexone is an opiate receptor antagonist. Instead of competing with heroin for the opiate receptor, naltrexone prevents heroin from binding to the receptor, thereby preventing heroin from eliciting the euphoric high.

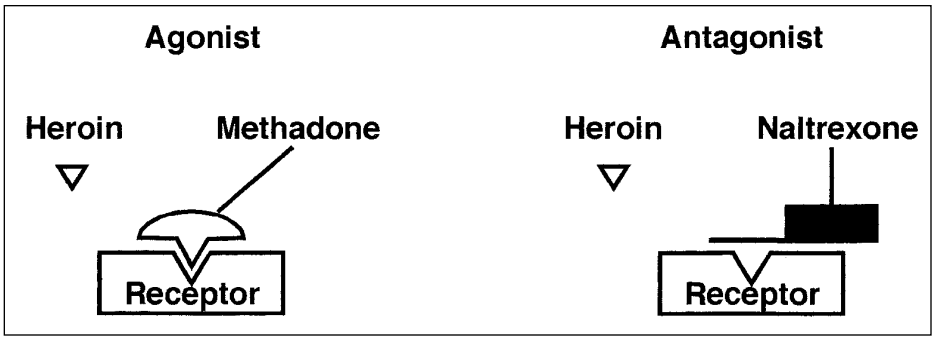

Figure 5.2: **Agonists** are chemicals that bind to a specific receptor to elicit a response, such as excitation or inhibition of action potentials. Methadone is an agonist that, like heroin, binds to opiate receptors. Unlike heroin, however, methadone does not produce the same level of euphoria. **Antagonists** are chemicals that bind to a receptor and block it, producing no response and preventing other chemicals (drugs or receptor agonists) from binding or attaching to the receptor. Naltrexone is an antagonist that binds to the opiate receptor and blocks heroin from binding.

Table 5.1 outlines the different pharmacological agents used to treat addiction. The development of medications to treat drug addiction has been difficult because the brain, the target of addictive drugs, is such a complex organ. Until scientists understand how drugs affect the chemistry of the brain, they cannot develop medicines that will alter the effects of addictive drugs.

Table 5.1: Pharmacological Treatments for Addiction[4]

Medication	Treatment for addiction to:	Mechanism
Methadone	Heroin	Opiate receptor agonist
LAAM	Heroin	Opiate receptor agonist
Naltrexone	Heroin	Opiate receptor antagonist
Naloxone	Heroin, alcohol	Opiate receptor antagonist
Buprenorphine	Heroin	Mixed opiate receptor agonist and antagonist
Nicotine gum, patches	Nicotine	Provide low doses of nicotine

Pharmacological therapies, if available, are not sufficient for effective treatment. Behavioral treatment in combination with pharmacological treatment is the most effective way to treat drug addiction.[5, 6] Recovering addicts need to address the behavioral and social consequences of their drug use and learn to cope with the social and environmental factors that contribute to their illness.[7] Behavioral treatments can occur either individually or as a group.[6]

Relapse is a common event for recovering drug addicts. In many ways, relapse should be thought of as a normal part of the recovery process. A recovering drug addict is more likely to experience a relapse if he or she also has other psychiatric conditions or lacks the support of family and friends.

Principles of Effective Drug Addiction Treatment

1. No single treatment is appropriate for all individuals. Matching treatment settings, interventions, and services to each individual's particular problems and needs is critical to his or her ultimate success in returning to productive functioning in the family, workplace, and society.

2. Treatment needs to be readily available. Because individuals who are addicted to drugs may be uncertain about entering treatment, taking advantage of opportunities when they are ready for treatment is crucial. Potential applicants can be lost if treatment is not immediately or readily available.

3. Effective treatment attends to multiple needs of the individual, not just his or her drug use. To be effective, treatment must address the individual's drug use and any associated medical, psychological, social, vocational, and legal problems.

4. An individual's treatment and services plan must be assessed continually and modified as necessary to ensure that the plan meets the person's changing needs. A patient may require varying combinations of services and treatment components during the course of treatment and recovery. In addition to counseling or psychotherapy, a patient at times may require medication, other medical services, family therapy, parenting instruction, vocational rehabilitation, and social and legal services. It is critical that the treatment approach be appropriate to the individual's age, gender, ethnicity, and culture.

5. Remaining in treatment for an adequate period of time is critical for treatment effectiveness. The appropriate duration for an individual depends on his or her problems and needs. Research indicates that for most patients, the threshold of significant improvement is reached at about three months in treatment. After this threshold is reached, additional treatment can produce further progress toward recovery. Because people often leave treatment prematurely, programs should include strategies to engage and keep patients in treatment.

6. Counseling (individual and/or group) and other behavioral therapies are critical components of effective treatment for addiction. In therapy, patients address issues of motivation, build skills to resist drug use, replace drug-using activities with constructive and rewarding nondrug-using activities, and improve problem-solving abilities. Behavioral therapy also facilitates interpersonal relationships and the individual's ability to function in the family and community.

7. Medications are an important element of treatment for many patients, especially when combined with counseling and other behavioral therapies. Methadone and levo-alpha-acetylmethadol (LAAM) are very effective in helping individuals addicted to heroin or other opiates stabilize their lives and reduce their illicit drug use. Naltrexone is also an effective medication for some opiate addicts and some patients with co-occurring alcohol dependence. For persons addicted to nicotine, a nicotine replacement product (such as patches or gum) or an oral medication (such as bupropion) can be an effective component of treatment. For patients with mental disorders, both behavioral treatments and medications can be critically important.

8. Addicted or drug-abusing individuals with coexisting mental disorders should have both disorders treated in an integrated way. Because addictive disorders and mental disorders often occur in the same individual, patients presenting for either condition should be assessed and treated for the co-occurrence of the other type of disorder.

9. Medical detoxification is only the first stage of addiction treatment and by itself does little to change long-term drug use. Medical detoxification safely manages the acute physical symptoms of withdrawal associated with stopping drug use. While detoxification alone is rarely sufficient to help addicts achieve long-term abstinence, for some individuals it is a strongly indicated precursor to effective drug addiction treatment.

10. Treatment does not need to be voluntary to be effective. Strong motivation can facilitate the treatment process. Sanctions or enticements in the family, employment setting, or criminal justice system can increase significantly both treatment entry and retention rates and the success of drug treatment interventions.

11. Possible drug use during treatment must be monitored continuously. Lapses to drug use can occur during treatment. The objective monitoring of a patient's drug and alcohol use during treatment, such as through urinalysis or other tests, can help the patient withstand urges to use drugs. Such monitoring also can provide early evidence of drug use so that the individual's treatment plan can be adjusted. Feedback to patients who test positive for illicit drug use is an important element of monitoring.

12. Treatment programs should provide assessment for HIV/AIDS, hepatitis B and C, tuberculosis and other infectious diseases, and counseling to help patients modify or change behaviors that place themselves or others at risk of infection. Counseling can help patients avoid high-risk behavior. Counseling also can help people who are already infected manage their illness.

13. Recovery from drug addiction can be a long-term process and frequently requires multiple episodes of treatment. As with other chronic illnesses, relapses to drug use can occur during or after successful treatment episodes. Addicted individuals may require prolonged treatment and multiple episodes of treatment to achieve long-term abstinence and fully restored functioning. Participation in self-help support programs during and following treatment often is helpful in maintaining abstinence.

Source: *Principles of Drug Addiction Treatment: A Research-based Guide* (1999) National Institute on Drug Abuse [online] *http://www.nida.nih.gov/PODAT/PODATIndex.html*.

Despite the preconceptions and value judgments many people place on addiction, it is, in many ways, similar to other chronic diseases such as diabetes and coronary artery disease. Genetic, environmental, and behavioral components contribute to each of these diseases. Some people may argue that drug addiction is different because it is "self-inflicted." As presented in Lesson 4, the initial choice to use drugs is voluntary but, once addiction develops, drug use is compulsive—not voluntary. Moreover, voluntary choices do contribute to the onset or severity of other chronic diseases as well. For example, a person who chooses to eat an unhealthy diet and not exercise increases his or her risk for coronary heart disease.

Successful treatment for any chronic disease necessitates patient compliance with the prescribed treatment regimen. Adhering to a treatment plan is difficult for those with any chronic disease. Less than 50 percent of diabetics follow their routine medication plan, and only 30 percent follow their dietary guidelines.[2] Problems adhering to a treatment plan lead to about 50 percent of diabetics needing to be treated again within one year of diagnosis and initial treatment. Similar statistics hold true for other chronic diseases: approximately 40 percent of patients with hypertension need emergency room treatment for episodes of extreme high blood pressure, and only about 30 percent of adult asthma sufferers take their medication as prescribed. Although treatment for drug addiction statistically is more successful than treatment for other chronic diseases, drug addicts commonly have relapses during treatment and recovery and begin using drugs again. The difficulties in following a treatment plan and coping with the stresses of a chronic disease illustrate how difficult changing human behavior is. Activities 2 and 3 of this lesson provide more insight into this topic.

Scientific research is likely to change how drug addiction is treated. Research to understand how the brain works and how drugs cause changes in the chemistry and function of the brain may lead to new medications to treat disease. Scientists continue to work on developing medications that relieve the cravings, experienced when drugs are withdrawn. Also, scientific advances may reveal ways to reverse the long-term damage to the brain that drugs inflict.

In Advance

CD-ROM Activities	
Activity Number	**CD-ROM**
Activity 1	no
Activity 2	yes
Activity 3	no
Activity 4	no

Photocopies		
For the class	**For each group of 3 students**	**For each student**
1 transparency of Master 5.1, *Ranking Disease Treatment Outcomes*	1 copy of Master 5.2, *Ruth's Story* [a] 1 copy of Master 5.3, *Mike's Story* [a] 1 copy of Master 5.4, *Carol's Story* [a] 1 copy of Master 5.5, *Disease Reference Information* [a]	1 copy of Master 5.6, *Evaluating the Cases*

[a] The CD-ROM version of Activity 2 is the preferred approach. Copies of Masters 5.2, 5.3, 5.4, and 5.5, are needed only if the CD-ROM is unavailable for classroom use.

Materials	
Activity 1	overhead projector
Activity 2	computers (optional)
Activity 3	overhead projector
Activity 4	none

Preparation

Arrange for students to have access to computers for viewing the case studies in Activity 2.

Procedure

This activity is intended to be a quick method to assess students' prior conceptions about treating drug addiction as a disease.

ACTIVITY 1: HOW EFFECTIVE IS TREATMENT?

1. **Begin the activity by holding a classroom discussion about illness and disease. Ask students to name some diseases. Write their responses on the board. What is a disease? What do you do when you have a disease? Why?**

   Students are likely to say a disease is some problem with the body that makes a person feel bad. They may also respond that a disease is something for which you see a doctor or for which you take medicine.

2. **Do all diseases or illnesses affect people in the same way? Are different diseases treated the same way?**

No, some are longer lasting and require more intervention from a doctor. Some require medicines and some require psychological treatment. The students may give a cold as an example of a short-term illness that doesn't require a great deal of treatment. Some students may bring up diabetes or heart disease as a longer-lasting illness that does require a great deal of treatment. Through these questions, students realize that there are similarities as well as differences in disease treatment.

3. **Introduce the terms *chronic* and *acute* and give examples of chronic and acute conditions. Categorize the diseases that were listed in Step 1 as either chronic or acute.**

   Chronic diseases are those that persist over a long period of time whereas *acute* diseases are of short duration but may have marked intensity and a rapid onset. Diabetes, heart disease, asthma, and cancer are examples of chronic diseases. Colds, flu, or a broken bone are acute conditions.

4. **Ask students to consider whether addiction is chronic or acute. Have them explain their answer based upon what they have learned in the unit so far.**

   Addiction is a chronic disease. The explanations should include something about the changes that occur in the brain as a result of drug use (Lessons 2, 3, and 4) and something about the compulsive, non-voluntary nature of addiction.

5. **Display a transparency of Master 5.1, *Ranking Disease Treatment Outcomes* (or write a similar chart on the board). Ask several students to rank the diseases according to success of treatment. The most successfully treated disease is assigned the #1 and the least successfully treated disease is assigned the #3. Write the responses given by many students. At this time, students can give reasons for their guesses. Summarize the rankings acknowledging the different opinions. Tell them you will return to this activity later.**

   Students will have misconceptions about how successful the treatment for addiction is. Students are likely to guess that treatment for addiction is less successful than treatment for other diseases. They may base their explanations on societal perceptions of addiction and not on knowledge of the biology of addiction. Some students may say that they do not have any information on which to base a ranking because each individual is different. Acknowledge that this is true, but point out that you are asking them to make a judgment about a group of people who are affected with each disease, not on how a specific individual will do in treatment. At this point, accept the students' rankings of treatment success.

ACTIVITY 2: EVALUATING THE CASE STUDIES

The following procedures describe how to conduct the CD-ROM version of this activity, which is the preferred method of instruction. Instructions for conducting the alternative print version follow.

Content Standard F: An individual's mood and behavior may be modified by substances.
Content Standard F: Personal choice concerning fitness and health involves multiple factors.
Content Standard F: Families serve basic health needs, especially for young children.

1. **Divide the class into groups of three students. Give each student a copy of Master 5.6, *Evaluating the Cases*. Have the students complete the CD-ROM activity, *Dealing with a Chronic Disease*. Each member of the group should answer questions 1-6 for a different case study. After they watch the three cases, the group should answer questions 7-11.**

   From the main menu on the CD-ROM, select *Drug Addiction Is a Disease—So What Do We Do About It*? Then click to watch the video interviews.

2. **As a class, discuss the case studies and the answers to Master 5.6.**

SAMPLE ANSWERS TO QUESTIONS ON MASTER 5.6

Case Study: Ruth

Question 1. What disease does the individual have? Is it chronic or acute?

Ruth is a heroin addict. Addiction is a chronic disease.

Question 2. How did the disease change the individual's life?

Ruth, like other addicts, was spending most of her energy focusing on how and where she was going to get her next drugs. She became isolated from her friends, lost her job, and got into trouble with the law.

Question 3. What is the recommended treatment?

The prescribed treatment for Ruth is a combination of medication (methadone) and behavioral treatments.

Question 4. What did the individual do to improve his or her recovery?

Ruth followed her doctor's advice and got both medicine to treat the physical side of addiction and psychological treatment to help her deal with the nonphysical problems of drug addiction. She also worked to change her life by enrolling in college, making new friends, and getting involved in running. After a recurrence of her drug problem, she again started her medical and psychological treatment.

Question 5. What did the individual do that impaired his or her recovery?

Ruth thought she had conquered her disease and didn't need to continue her treatment. She went back to the friends who started her on drugs in the first place.

Question 6. Are there other things the individual could do to help with the disease?

As long as Ruth continues her treatment plan, she should be able to manage her disease. If she ignores her treatment, her chance of having a recurrence increases.

Case Study: Mike

Question 1. What disease does the individual have? Is it chronic or acute?

Mike has diabetes, a chronic disease.

Question 2. How did the disease change the individual's life?

After being diagnosed with diabetes, Mike had to check his blood glucose levels regularly, give himself insulin injections, and watch his diet.

Question 3. What is the recommended treatment?

Mike's doctors placed him on insulin therapy. The doctors also prescribed behavioral treatments.

Question 4. What did the individual do to improve his or her recovery?

To help learn about diabetes, Mike attended a camp where he received information about coping with the disease. After some problems, Mike learned to control his blood sugar levels.

Question 5. What did the individual do that impaired his or her recovery?

Mike had trouble in social situations because he couldn't do the same things his friends did. When he ignored his treatment, Mike had trouble in school and ended up in the hospital.

Question 6. Are there other things the individual could do to help with the disease?

Mike needs to continue to follow his treatment plan and monitor his blood glucose level.

Case Study: Carol

Question 1. What disease does the individual have? Is it chronic or acute?

Carol has hypertension. Hypertension is a chronic disease.

Question 2. How did the disease change the individual's life?

Because of the disease, Carol had problems at work as well as with her family interactions. Her health problems became more severe and she had a mild stroke.

Question 3. What is the recommended treatment?

Initially, the doctor prescribed medication as well as a change in Carol's diet to reduce her salt intake. The doctor also told Carol that exercise would be beneficial.

After Carol had problems following the plan, the doctor recommended that Carol get additional help from other health professionals.

Question 4. What did the individual do to improve his or her recovery?

Carol followed the treatment plan for a while.

Question 5. What did the individual do that impaired his or her recovery?

Carol didn't follow her doctor's advice after the initial period and then ignored her doctor's suggestion that she get additional help from other specialists.

Question 6. Are there other things the individual could do to help with the disease?

Carol needs to fit her treatment into her life.

Comparing the Cases

Question 7. Which individuals were successful in their treatment? Which individuals were not?

Ruth and Mike were both successful in their treatment. Although they had problems, both of them decided to again comply with their treatment. Carol was not successful; she did not follow the recommended treatment.

Question 8. Who was cured of their disease? What is the difference between treatment and cure?

None of the individuals was cured of his or her disease. Treatment eliminates or reduces the effects of the disease, but does not eliminate the disease. If a disease is cured, the problem is fixed and requires no additional treatment.

Question 9. How are the treatments for the different diseases similar?

In each case, the prescribed treatment included both medication and behavioral treatments. In each case, treatment is a long-term process.

Question 10. How are the treatments different?

Different medications are used to treat different diseases.

Question 11. Can you identify similarities and differences in the actions or strategies that individuals took to help them deal with their disease?

All three individuals initially complied with the prescribed treatment. All three individuals experienced a time when they ignored the treatment plan and had reoccurring problems with the disease. Ruth and Mike chose to get additional treatment and learned to cope with their disease. Carol, on the other hand, made the choice to continue to ignore the treatment plan and her doctor's advice.

ALTERNATE VERSION OF ACTIVITY 2 FOR CLASSES WITHOUT ACCESS TO COMPUTERS

The following procedure provides instruction for completing Activity 2 without the use of a computer. Use this version if your students do not have access to computers equipped with a CD-ROM drive.

1. **Break the class into groups of three students. Give one copy of each of the following masters to each group: Master 5.2, *Ruth's Story*, Master 5.3, *Mike's Story*, Master 5.4, *Carol's Story*, and Master 5.5, *Disease Reference Information*. Each student in the group should read a different case. Give each student a copy of Master 5.6, *Evaluating the Cases*. Each**

student should answer questions 1-6 about the case study that he or she read. The students should answer questions 7-11 as a group. Give students time to discuss and write answers to the questions. They may refer to the case studies for help.

2. **After all the groups have finished the questions, discuss the cases with the class.**

   Sample answers for the questions on Master 5.6 are given in the procedures for the CD-ROM based version of this activity.

ACTIVITY 3: SUCCESS RATES FOR TREATING CHRONIC ILLNESS

Content Standard A: Formulate and revise scientific explanations and models using logic and evidence.

1. **Display the chart (Master 5.1) used in Activity 1 of this lesson showing the students' rankings. Ask them if they want to change their answers after reading the case studies. Change the rankings according to the students' responses.**

2. **Next, fill in the correct data for the chart (see below). Ask students what the data tell them about the different diseases. Also, ask students why treatment is not 100 percent successful for any of the diseases.**

Disease	Predicted success	Medical compliance*[2,4]
Heroin addiction		60%
Hypertension		<30%
Diabetes		<50%

*Medical compliance is the adherence to a physician's treatment plan. This is one of the best indicators of treatment success.

Now that students have evaluated the case studies, they should understand that addiction is a disease that is treated as effectively as, or more effectively than, other chronic diseases.

Treatment for addiction is often more successful than treatment for other diseases. The data show that addiction can be treated effectively. Students should also realize that treatment is not always completely successful and that relapse is common. Use this opportunity to make connections back to the case studies. Some students will suggest that treatment is not always successful because patients do not always comply with their treatment. This is correct. Treatment is more effective if the patient participates actively in the process. This is an important point for students to understand. After all, therapies will not be effective if the patient does not take the medicine or attend the counseling session. The students should also realize after reading the case studies that drug addiction and other chronic diseases affect more than the physical body. A person's social, economic, and emotional well-being also need to be addressed. Reinforce to students that behavioral therapy and counseling help individuals cope with the problems in life that can trigger a relapse. Some students may cite an example about counseling from the case studies.

3. **To get students to consider the problems of following a treatment plan, ask them if they have ever made New Year's resolutions. How long did they keep the resolution and why did they break it?**

One of the hardest things humans attempt is to change their behaviors. This is true for adhering to a treatment plan for disease just as it is with other types of behavior changes.

ACTIVITY 4: ADDICTION IS A BRAIN DISEASE

1. **Read the following scenario to the class:**

   Robert has been arrested several times for drug possession. After the first arrest, he was given probation. After the second and third arrests, he was sentenced to jail for one year each time. The police arrested him a fourth time, but instead of having Robert serve more time in jail, the judge ordered him to enter a drug treatment program.

2. **Ask students to write a paper that provides scientific information that would support the judge's decision to have Robert undergo drug treatment instead of going to jail. Instruct the students that they must incorporate information they have learned from Lessons 1–5 to support their position.**

   Students may benefit from reviewing their work from all of the lessons. The crux of the paper should be that drug addiction is a brain disease and drugs cause long-term changes in the function of the brain.

This activity asks students to integrate the information they have learned in all of the lessons. Review their papers to evaluate their understanding.